



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,938	03/09/2004	Ron Naftali	6317P024	4473
<div>7590 Tarek N. Fahmi Applied Materials, Inc. Patent Counsel Santa Clara, CA 95052</div>				
<div>EXAMINER LIU, MICHAEL</div>				
<div>ART UNIT 2851</div>				
<div>MAIL DATE 11/18/2008</div>				
<div>DELIVERY MODE PAPER</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/796,938

Applicant(s)

NAFTALI, RON

Examiner

Michael Liu

Art Unit

2851

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. Receipt is acknowledged of the Amendment filed 9/19/08. Claims 1, 2, and 5 have been amended by this amendment.

Oath/Declaration

2. The correction to the oath or declaration has been considered, and accordingly, the objection to the oath or declaration is withdrawn.

Drawings

3. The corrections to the drawings have been considered, and as a result, the drawing objections are withdrawn.

Specification

4. The corrections to the title and the disclosure have been considered, and accordingly, the previous objections to the specification are withdrawn.

5. The abstract of the disclosure is objected to because of minor informalities. The phrase "an saturable absorber" and "said bean" both must be corrected. Correction is required. See MPEP § 608.01(b).

Claim Objections

6. The amendments to the claims have been considered, and as a result, all claim objections are withdrawn.

Claim Rejections - 35 USC § 103

7. The claimed subject matter has not been amended, and Applicant's arguments regarding the Fukuda reference are not persuasive. Therefore, the prior art of Fukuda has been maintained in this rejection.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

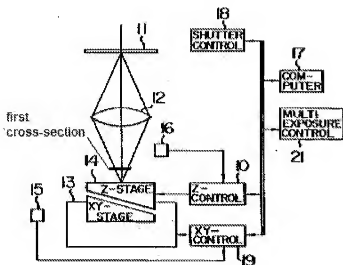
9. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al (4,904,569).

Re claims 5 and 1: Fukuda discloses a system [Fig 3] for recording a pattern 11, comprising:

a controller 17, for determining an illumination scheme [via multi-image using exposure control system 21] in response to the pattern; and

optics [shutter controlled by shutter control system 18], coupled to the controller, for directing, in response to the determination, at least one beam of radiation [C11L62-63: excimer laser] having a first cross-section [Drawing 1] towards a reversible transmission film 44 so as to allow a portion of said beam to propagate towards a radiation sensitive layer 42, wherein the portion has a second cross-section [Fig 8d: grooves between resist pattern 46] that is smaller than the first cross-section.

FIG. 3



Drawing 1 First cross-section labeled.

Fukuda does not disclose expressly a saturable absorber.

However, Par 003 of the instant disclosure states, "A material can be regarded as a saturable absorber if its light absorption decreases with increasing light intensity." Similarly, Fukuda teaches, in C13L43-50, "Further, the transparency of the reversible transmission film depends upon the quantity of exposure light. That is, when a large quantity of exposure light is incident on the reversible transmission film, the transparency thereof is high. While, when a small quantity of exposure light is incident on the reversible transmission film, the film is not so transparent." Based on these descriptions, a reversible transmission film acts as a saturable absorber, only allowing light transmittance under a large quantity of exposure light, or increasing light intensity.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to recognize that the reversible transmission film 44 of Fukuda has the same properties as a saturable absorber and could be used as such, for the purpose of forming sharp patterns to achieve devices with better performance.

Re claims 6 and 2: Fukuda discloses wherein the optics are adapted to focus the at least one beam of radiation onto an intermediate layer 43.

Re claims 7 and 3: Fukuda discloses wherein the second cross-section [see Fig 8d] is about half of the first cross-section [Drawing 1].

Re claims 8 and 4: Fukuda discloses wherein the controller is adapted to control an intensity of the beam of radiation to achieve a certain second cross-section. [C17L6-12: "Further, it is possible to cause the bleaching characteristic of the reversible transmission film to match with the sensitivity of the photoresist layer by appropriately selecting the exposure light quantity and the number of exposure operations, and hence the reversible transmission film can act as an efficient contrast enhancement layer."]

Response to Arguments

10. Applicant's arguments with respect to Fukuda have been fully considered but they are not persuasive. The instant application cites that the light absorption of the saturable absorber decreases with increasing light intensity [Par 003]. For Fukuda, high light transparency of the reversible transmission film occurs when there is a large quantity of incident exposure light [C13L43-50]. Applicant contends that the light intensity is not related to the quantity of exposure light, and therefore, Fukuda can not be used as prior art. The examiner respectfully disagrees. In physics, intensity is

defined as a measure of the time-averaged energy flux and has units of power per area. As the quantity of incident exposure light gets larger, there is a larger amount of current passing through the same area. As a result, the power per area increases, which thereby increases the light intensity. The quantity of exposure light is therefore synonymous with light intensity, and the invention of Fukuda reads on the instant claim limitations.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Liu whose telephone number is 571-272-9019. The examiner can normally be reached on Monday through Friday 9 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Liu/
Examiner
Art Unit 2851

ML 11/12/08

/Hung Henry V Nguyen/
Primary Examiner of Art Unit 2851